

# Longitudinal Investigation of Daily Physical Education on Fitness Levels and Processing Speed among Minority Youth



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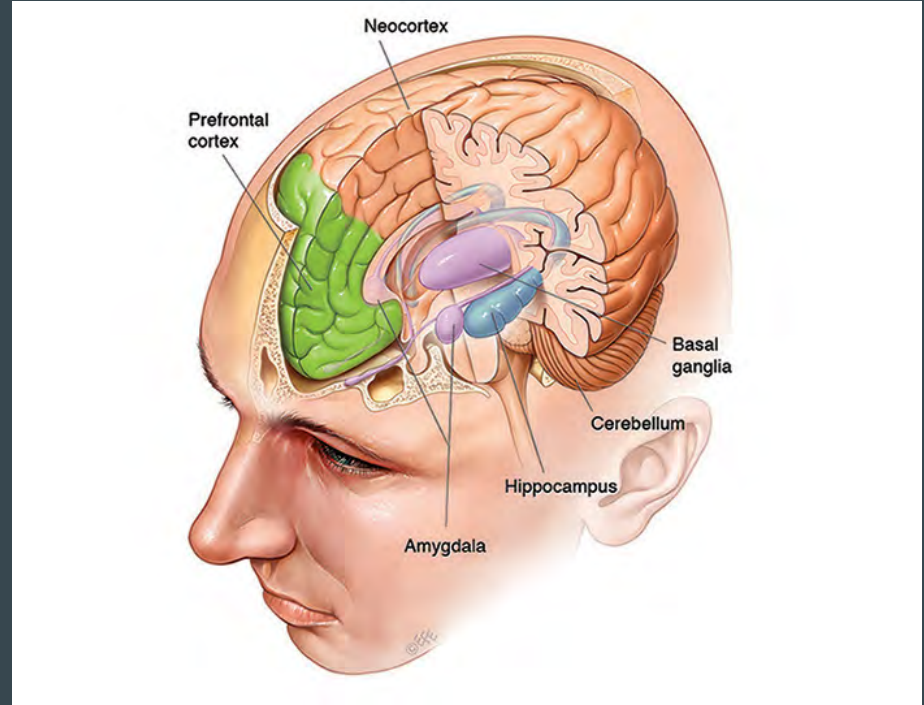
# Background and Significance

Research has shown that cognition, executive functions, and academic achievement improve with physical activity.



# Why?

Studies indicate that aerobic fitness may positively impact important learning centers of the brain.



# 3.8%

of American public elementary schools provide  
daily physical education.

# Purpose of Study

Examine the impact of  
45 minutes of daily  
physical education on the  
fitness levels and  
Perceptual Speed among  
minority elementary  
school youth.

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# What is Perceptual Speed?

Component of executive function that is associated with higher cognitive abilities and linked to increases in fitness and physical activity participation.

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# Methods

Legacy Early College: 45 minutes of daily physical education

Control School: 45 minutes of physical education once a week



# Methods

**Legacy Early College:** 85 Elementary students (grades 2-5)

45 females

40 males

**Control School:** 75 Elementary students (grades 2-5)

38 females

37 males

Both schools are Title I schools in Greenville, SC

All students participated for the duration of the study



# Design and Analysis

- Used an analysis of variance (ANOVA) univariate linear model
- Calculated gain scores (post-test assessment in May 2017 – pre-test in September 2015), stratified by ethnicity and gender, and analyzed for significance
- The interaction between school and time was estimated for each outcome
- Each analysis stratified by gender and adjusted by age to control for baseline differences by school

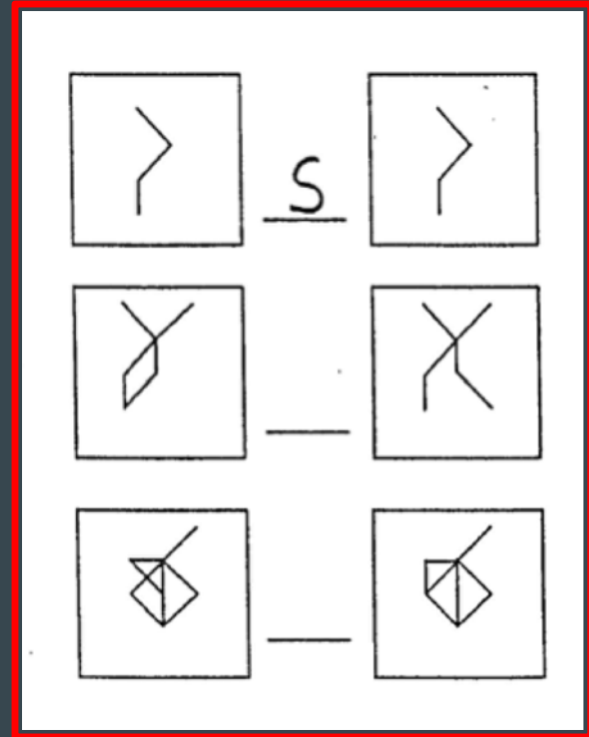
# Fitness Measurements





# Perceptual Speed Measurement

This study used the  
Perceptual Speed Pattern  
Recognition Test as an  
assessment of executive  
function.



# Results: Progressive Aerobic Cardiovascular Endurance Run (PACER)



School	Gender	PACER Laps
Legacy Early College	Female	10.58*
	Male	15.97*
Control School	Female	5.62
	Male	5.61

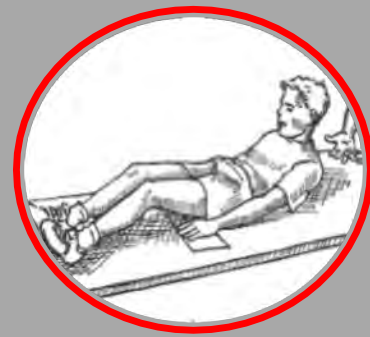
\*denotes significance:  $p < 0.05$

# Results: Push-Ups



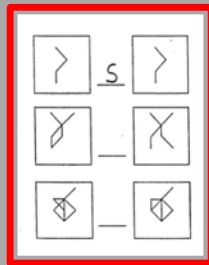
School	Gender	Push-Ups
Legacy Early College	Female	4.09*
	Male	4.16*
Control School	Female	-0.70
	Male	-1.16

# Results: Curl-Ups



School	Gender	Curl-Ups
Legacy Early College	Female	13.69*
	Male	14.79*
Control School	Female	0.39
	Male	2.35

# Results: Perceptual Speed



School	Gender	Total Score
Legacy Early College	Female	12.93
	Male	15.43*
Control School	Female	9.82
	Male	10.27



# Conclusion

45 minutes of daily  
physical education led to  
an increase in physical  
fitness levels and  
Perceptual Speed among  
minority elementary  
school youth

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# Discussion

These findings suggest that daily physical education can influence the cognitive and fitness performance of minority elementary school youth.

